

What is Claimed:

1. A foam-in-bag dispenser system, comprising:

a film supply support;

a film feeding device for drawing film from a film source supported on said film supply

5 support;

a dispenser having a foam material outlet;

a bag forming apparatus which forms bags for receiving the foam material output of the
dispenser, and wherein

said dispenser comprises a mixing module which receives a foam precursor chemical and

10 a dispenser housing which internally receives said mixing module and is in contact with film

being drawn past said housing by said film feeding device, and said housing being dimensioned
as to present a smooth contact surface over all areas of film contact with said housing.

2. The system of claim 1 wherein said housing includes a curved upper edge and two
planar side surfaces extending down from respective opposite ends of said curved upper edge.

15 3. The system of claim 2 further comprising a dispenser housing support which supports
said dispenser housing so as to have a fixed interior end and a free outward end, with said planar
side surfaces representing front and back surfaces, and wherein said film feeding device feeds
front and back film sheet sections into contact with respective front and rear planar side surfaces.

4. The system of claim 1 wherein said film feeding device includes a source of C-fold
20 film and feeds said C-fold film past said housing with a fold edge of said C-fold film positioned
even further outward of said outward end of said dispenser housing and with the opposite non-
joined edges being located a distance outward of the interior end of said housing.

5. The system of claim 4 wherein said film feeding device includes a nip roller set which receives film following passage downstream with respect to film feed travel of said housing and places in contact the non-joined edges for edge sealing purposes.

6. The system of claim 1 wherein said mixing module includes a reciprocating rod in a chemical outlet passage of said mixing module and said housing supports drive components of a drive transmission which is engaged with said rod for reciprocation within said mixing module.

7. The system of claim 6 wherein said drive transmission includes a sliding crank mechanism covered by said dispenser housing.

8. The system of claim 6 further comprising a motor in driving engagement with said drive transmission with said motor being positioned external to said housing.

9. The system of claim 1 wherein said housing includes a main housing portion which has outer walls representing a majority of the planar surface area in contact with the film being fed past said housing and is an extruded component.

10. The system as recited in claim 1 wherein said dispenser housing includes a free end housing section with said mixing module being mounted at said free end housing section and said free end housing section having an access door which is adjustable between a closed, mixing module cover mode and an open mixing module access mode.

11. The system as recited in claim 10 wherein said access door is pivotably mounted for rotation between said cover mode and said access mode.

12. The system as recited in claim 11 wherein said free end housing section includes a fixed surface to which is connected a door closure and mixing module seal compression device which is adjustably mounted for movement between a compression on access door state and a non-compression on access door state.

13. The system as recited in claim 12 wherein said door closure and mixing module seal compression device comprises an over center toggle clamp.

14. The system as recited in claim 13 wherein said overcenter toggle clamp includes means for adjusting full toggle closure compression level on said door.

5 15. The system as recited in claim 10 wherein said housing and mixing module include male/female position mount means for positioning said mixing module in a proper location prior to door closure covering.

16. The system as recited in claim 1 further comprising a chemical inlet manifold and a dispenser housing support which supports said dispenser housing so as to have a fixed interior
10 end and a free outward end, and wherein said fixed interior end is in chemical flow communication with said inlet manifold and said housing has first and second chemical passageways formed therein and extending from said inlet manifold to outlet port holes positioned for fluid communication with inlet ports formed in said mixing module when supported in said housing.

15 17. The system as recited in claim 16 wherein said mixing module has inlet port projections which are sized for retention of seals which stay fixed to said mixing module and form a sealing relationship with the outlet ports of said chemical passageways formed in said housing.

18. The system as recited in claim 17 further comprising a solvent passage hole in said
20 manifold and a solvent passageway in said dispenser housing having a solvent outlet port positioned for solvent feed to said solvent passage hole of said mixing module when mounted on said dispenser housing.

19. The system as recited in claim 18 further comprising a heater reception passageway formed in said dispenser housing and positioned within two inches of each of said dispenser housing chemical and solvent passageways.

20. The system as recited in claim 19 further comprising an inlet manifold heater
5 positioned in said inlet manifold.

21. The system as recited in claim 16 further comprising manifold flow shut off valves, pressure transducers for a monitoring pressure levels of chemical being fed to said dispenser housing and filter units supported by said inlet manifold and said dispenser housing encompassing a portion of a drive system for reciprocating the end rod of said mixing module
10 and said drive system including a drive motor, and wherein each of said shut off valves, drive motor, filter units, and transducers are spaced a distance inwardly away, in a direction of elongation of the housing, from an interior edge of the film being fed past said housing so as to avoid foam contact therewith.

22. The system as recited in claim 16 further comprising a heater reception passageway
15 formed in said dispenser housing and positioned within two inches of each of said dispenser housing chemical passageways.

23. A dispenser system comprising:

a mixing module having a housing within which is positioned a mixing chamber with a rod reception passageway and at least one chemical inlet passage opening into said rod reception
20 passageway, said mixing module further comprising a rod which is received for reciprocation in said rod passageway and has an engagement section;
a support for said mixing module;

a drive mechanism, said drive mechanism including a motor and a drive transmission in driving communication with both said motor and said rod engagement section, said drive transmission including a crank and slider combination.

24. The dispensing system as recited in claim 23 further comprising a bag forming
5 apparatus which is positioned for receipt of chemical output by said mixing module for containment in said bag once formed.

25. The dispensing system as recited in claim 23 wherein said crank and slider
combination include a crank member which is rotatably driven by said motor and which is
connected to a first end of a crank connecting rod which crank connecting rod has a second end
10 connected to a slider.

26. The dispensing system as recited in claim 25 wherein said slider is a piston member
having a first end pivotably connected to said connecting rod and a separate end with an engager
receiving said mixing module rod engagement section.

27. The dispensing system as recited in claim 26 wherein said piston is multi-walled and
15 confined for linear travel by a pair of parallel slide walls.

28. The dispensing system as recited in claim 26 wherein said mixing module rod
includes a main body which is free of any annular recessed areas along an axial length extending
from a first free end to said mixing module rod engagement section, and wherein said
engagement section is an expanded member relative to said main body which extends radial out
20 to a greater extent than said main body at least at a border region between said main body and
engagement section.

29. The dispensing system as recited in claim 28 wherein said engager of said piston includes a slotted recess with an enlarged area for receipt of said engagement section of said rod and a smaller recess for receipt of a portion of said main body.

30. The dispenser system as recited in claim 23 wherein said drive transmission includes
5 a drive shaft which is driven by an output shaft of said motor and which is in driving communication with a crank mechanism of said crank and slide combination.

31. The dispenser system as recited in claim 30 wherein said crank mechanism comprises a first crank section and a second crank section releasably secured to said first crank section and having first and second crank extensions, and said support for said mixing module
10 including a dispenser housing having a first bearing section and a second bearing section within which said first and second crank extensions are respectively received.

32. The dispenser system as recited in claim 31 wherein said crank and slide mechanism further includes a connecting rod and a piston as said slider with said connecting rod is pivotably joined to each of said piston and crank mechanism and said piston including means for releasable
15 engagement with said mixing module rod and said piston being confined for linear travel by a confining section of said dispenser housing.

33. The dispenser system as recited in claim 23 wherein said support for said mixing module includes a dispenser housing having a mixing module mounting section and a cover positionable over said mixing module upon receipt in said mounting section, and said motor
20 being supported by said dispensing housing at an external location to said dispenser housing and said crank and slider mechanism being supported internally within said dispenser housing.

34. The dispenser system as recited in claim 33 wherein a main shaft extends through an axial passageway in said dispenser housing to an outward end of said dispenser housing and said

crank mechanism converts rotation forces of said main shaft to linear reciprocation forces vertically aligned with a verticals mounted mixing module in said dispenser housing.

35. The dispenser system as recited in claim 23 further comprising means for monitoring a location of said mixing module rod within said mixing module.

5 36. The dispenser system as recited in claim 35 wherein said means for monitoring includes an encoder associated with said motor which is a DC brushless motor and said means for monitoring further comprising a processor for processing position data received by said encoder.

10 37. The dispenser system as recited in claim 36 further comprising a home position sensor which is in communication with said processor and positioned at a location which monitors a position of either said mixing module rod or a location of an object in said drive transmission.

15 38. The dispenser system as recited in claim 23 wherein said drive mechanism provides maximum drive output in unison with end points of reciprocation travel in said mixing module rod.

39. The dispenser system as recited in claim 38 wherein the maximum drive output is in excess of 1000 lbf at said end points which coincide with end points of travel in a slider of said crank and slider combination.

20 40. The dispenser system as recited in claim 23 wherein said drive transmission includes a one way clutch and a secondary transmission system for driving an addition component in said dispenser system with said motor.

41. The dispenser system as recited in claim 40 wherein said additional component is a cleaning brush drive system which is positioned for cleaning engagement with an outlet end of said mixing module.

42. A drive mechanism for a mixing module rod, comprising:

5 a motor; and

a drive transmission, said drive transmission being in driving communication with said motor and having a mixing module rod engagement section and a crank and slide combination for converting rotational drive forces of said motor into linear reciprocation drive forces in said rod engagement section.

10 43. A method of avoiding film wrinkling in a foam-in-bag dispensing system comprising feeding film past a dispenser housing supporting said mixing module which dispenser housing presents only smooth surface portions to film sections passing to opposite sides of said dispenser before coming back into contact in a nip roller feed device in said dispensing system for bag formation.

15 44. A method for reciprocating a purge rod in a mixing module, comprising:

providing a mixing module rod driver which includes a motor and a drive transmission drivingly connected to said mixing module rod with said drive transmission including a crank and slider assembly.